I Claim:

1. In a batch liquid purifier having a generator outputting an ozone-containing gas merged during a purification operation with liquid flowing in a passageway from a liquid batch container to a purified liquid dispenser, an improvement comprising:

a. admission of untreated liquid to the passageway being blocked when the purifier is not operating;

b. a pumping system that operates when the purifier is operating to admit untreated liquid to the passageway, to flow liquid through the passageway, and to mix the ozone-containing gas with the liquid flowing in the passageway to dissolve the ozone in the liquid;

c. the liquid passageway downstream and adjacent to the mixing of the ozone-containing gas with the liquid being formed as an upflow chamber in which bubbles of the ozone-containing gas rise within and to the level of an initial flow of liquid rising in the upflow chamber at the beginning of a purification cycle; and

d. the liquid flow passageway downstream of the upflow chamber being configured to ensure sufficient contact between ozone and the liquid to purify the liquid before it reaches the dispenser.

2. The improvement of claim 1 including a light-transmitting wall of the upflow chamber making bubbles visible as they rise within the chamber.

3. The improvement of claim 2 including an illuminator arranged for enhancing the visibility of the rising bubbles.

4. The improvement of claim 2 wherein the light-transmitting wall is colored.

5. The improvement of claim 1 wherein the generator operates before liquid flows in the passageway.

44 39
~~6~~. The improvement of claim ~~1~~ including a filter for the liquid being dispensed and an indicator showing a need to change the filter.

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~~7~~. The improvement of claim ~~6~~ wherein the indicator is responsive to an extent of operation of the purifier.

46 39
~~8~~. The improvement of claim ~~1~~ including a mixer in the liquid passageway.

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~~9~~. The improvement of claim ~~8~~ including a mixer upstream of the upflow chamber and a mixer downstream of the upflow chamber.

48 39
~~10~~. The improvement of claim ~~1~~ including a constriction in an air flow through the generator enabling the pumping system to draw liquid from the container.

49 39
~~11~~. The improvement of claim ~~1~~ including a pump protector arranged for stopping liquid pumping after the container is empty.

50 39
~~12~~. The improvement of claim ~~1~~ including an air pump connected to the liquid passageway and arranged to help empty the liquid passageway of liquid after a purification cycle.

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~~13~~. The improvement of claim ~~12~~ including a liquid sensing system arranged to control the air pump.

52 39
~~14~~. The improvement of claim ~~1~~ wherein the liquid dispenser includes a movable spout that can be extended beyond a housing of the purifier.

53 52
~~15~~. The improvement of claim ~~14~~ wherein extending the spout activates the purifier and retracting the spout deactivates the purifier.

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~~16~~. The improvement of claim ~~14~~ including a switch that blocks dispensing unless the spout is extended.

55 17. The improvement of claim 39 including a gas-liquid separator arranged in the liquid passageway upstream of the dispenser.

56 18. The improvement of claim 39 including a valve upstream of an outlet of the dispenser arranged for closing the dispenser outlet when liquid is not being dispensed.

B8 19. The improvement of claim 1 including a desiccant and a valve upstream of the ozone generator arranged so that the valve opens an inlet to the desiccant only when air flow enters the generator during operation.

58 20. The improvement of claim 39 wherein the container is detachable from the purifier.

C7 B3 21. A method of purifying a batch of liquid with ozone from a generator producing an ozone-containing gas that is mixed with the liquid in a passageway extending from an untreated liquid container to a purified liquid dispenser, the method comprising:

a. after mixing the ozone-containing gas with liquid flow commencing at the beginning of a batch purification cycle, directing the liquid and ozone mixture into an upflow chamber in which the initial flow of liquid rises as bubbles of ozone-containing gas rise at a faster rate to overtake the preceding liquid; and

b. blocking entry of untreated liquid into the passageway except when the purifier is purifying liquid flow.

2 22. The method of claim 21 including illuminating the upflow chamber to make the rising bubbles visible.

3 23. The method of claim 21 including coloring a viewing wall of the upflow chamber through which the rising bubbles are visible.

4 24. The method of claim 21 including starting the ozone generator before starting the liquid flow.

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~~25~~. The method of claim ~~21~~ including configuring the liquid and ozone flow downstream of the upflow chamber to ensure sufficient ozone contact with the liquid to purify the liquid before it reaches the dispenser.

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~~26~~. The method of claim ~~21~~ including constricting air flow through the generator to enable a pumping system to cause the liquid flow.

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~~27~~. The method of claim ~~21~~ including stopping a liquid flow pump after the liquid is no longer flowing.

8 1
~~28~~. The method of claim ~~21~~ including mixing a liquid and gas flow in the passageway.

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~~29~~. The method of claim ~~21~~ including pumping air into the liquid passageway to help empty the liquid passageway after a purification cycle.

10 1
~~30~~. The method of claim ~~21~~ including indicating a need to change a filter upstream of the purified liquid dispenser.

11 10
~~31~~. The method of claim ~~30~~ including basing the filter change indication on an extent of purifier operation.

12 1
~~32~~. The method of claim ~~21~~ including separating gas from the purified liquid downstream of the upflow chamber.

13 11
~~33~~. The method of claim ~~21~~ including dispensing purified liquid through an extendible dispensing outlet.

14 13
~~34~~. The method of claim ~~33~~ including activating liquid purification upon extending the dispenser outlet and deactivating liquid purification upon retracting the dispenser spout.

15 13
~~35~~. The method of claim ~~33~~ including closing the dispensing outlet except when purification is occurring.

16 1
~~36~~. The method of claim ~~21~~ including blocking an air inlet to a desiccant upstream of the generator except when air is drawn into the generator.

37. The method of claim 36 including blocking liquid flow unless the dispensing outlet is extended.

38. The method of claim 21 including making a container for untreated liquid detachable from a purifier of the liquid.

39. A liquid purifier combining an unpurified liquid batch container, a liquid flow passageway leading from the container to a purified liquid outlet, a generator producing an ozone-containing gas, and a pumping system flowing the liquid through the passageway and combining the ozone-containing gas with the liquid to purify the liquid en route to a dispensing outlet, the purifier comprising:

a. the liquid passageway downstream of a region where the ozone-containing gas joins the liquid being formed into an upflow chamber in which a leading flow of the liquid rises at a rate exceeded by a rate of rise of bubbles of the ozone-containing gas within the liquid so that the ozone-containing gas overtakes the leading liquid flow; and

b. the liquid passageway includes ozone and liquid mixing and a liquid flow configuration that ensures purifying contact of the liquid with ozone before the liquid reaches the dispensing outlet.

40. The purifier of claim 39 wherein a wall of the upflow chamber transmits light and makes the rising bubbles visible.

41. The purifier of claim 40 including an illuminator enhancing the visibility of the rising bubbles.

42. The purifier of claim 40 wherein the light-transmitting wall of the upflow chamber is colored.

43. The purifier of claim 39 including a barrier to entry of the liquid into the passageway before the pumping system operates.

44. The purifier of claim 39 wherein the ozone generator operates before liquid flows in the passageway.

25 16 19
~~45~~. The purifier of claim ~~39~~ including a mixer upstream of the upflow chamber.

26 19
~~46~~. The purifier of claim ~~39~~ including a constriction in a flow of air through the generator enabling the pumping system to draw liquid from the container.

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~~47~~. The purifier of claim ~~39~~ including a pump controller arranged for stopping a liquid pump after liquid stops flowing to the pump.

28 19
~~48~~. The purifier of claim ~~39~~ including an air pump connected to the liquid passageway and arranged to help empty the liquid passageway of liquid after a purification cycle.

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~~49~~. The purifier of claim ~~48~~ including an air pump controlling system responsive to liquid in the passageway for turning the air pump on and off.

30 19
~~50~~. The purifier of claim ~~39~~ wherein the dispensing outlet is closed when purified liquid is not being dispensed.

31 19
~~51~~. The purifier of claim ~~39~~ wherein the dispensing outlet includes a movable spout that can be extended beyond a housing of the purifier.

32 31
~~52~~. The purifier of claim ~~51~~ wherein liquid flow is blocked unless the spout is extended.

33 31
~~53~~. The purifier of claim ~~51~~ including a system for starting and stopping the purifier respectively in response to extension and retraction of the dispensing outlet.

34 19
~~54~~. The purifier of claim ~~39~~ including a gas-liquid separator arranged in the liquid passageway downstream of the upflow chamber.

35 19
~~55~~. The purifier of claim ~~39~~ including a mixer downstream of the upflow chamber.

36 17 19

~~56~~. The purifier of claim ~~39~~ including a valve upstream of a desiccant in an air inlet to the generator for preventing moist air from entering the desiccant except when air is drawn into the generator during operation.

37 19

~~57~~. The purifier of claim ~~39~~ wherein the container is detachable from the purifier.

add 7